

rise of the earth causing a lowering of temperature with the consequent formation of glaciers, the weight of the ice sheet in turn causing the crust to sink back, raising the temperature and melting the ice. This is traced through four periods, the maximum rise of land in each period being less than in the preceding. Thus it is demonstrated that the "climates of the world are the result of geographical conditions of the world," and "that within certain limits climatic and geographic conditions react one on another to produce continuous though very slow changes in both."—C. L. M.

#### PERIODICITY OF WINTER TEMPERATURES IN WESTERN EUROPE.<sup>1</sup>

By C. EASTON.

[Reprinted from Science Abstracts, Sect. A, Sept. 30, 1918, §913.]

All available data are collected and carefully sifted, reports of exceptionally mild winters being used in addi-

<sup>1</sup> Physikalische Zeitschrift, June 1, 1918, 19 : 234-237.

tion to those of severe ones. Each abnormal winter is given a coefficient of temperature ranging between +5 and -5, the remaining winters being marked zero. The series covers 1,157 years. The data are investigated with a view to determining periodicities. An 89-year period is traced and it is further found that in the past 65 years, for which reliable thermometric observations are available, the temperature sequence of this 89-year period can be clearly followed, thus affording confirmation of its reality. The chief features of the fluctuation are that in the first quarter of the 89 years cold winters prevail and in the last quarter warm ones. A sine wave of 44½ years seems to be an important part of the 89-year fluctuation. It is considered that the results are sufficiently definite to be of some assistance in long-range forecasting. No evidence is found of a gradually increasing or decreasing frequency of severe winters in historical times.<sup>2</sup>—J. S. Di[nes.]

<sup>2</sup> See also review in Geogr. Rev., 1918, 4 : 398.

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##### RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Professor in Charge of Library.

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

##### Bavaria. Meteorologische Centralstation.

Deutsches meteorologisches Jahrbuch für 1914-15. Jahrgang 36-37. München. 1916-19. 2v. charts (part. fold.) tables. 33 cm.

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##### Dorno, Carl Wilhelm Max.

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